

Doctor James Harris Rogers



## Biography

Dr. James Harris Rogers (1850--1929)

Dr. James Harris Rogers was born in Franklyn, Tennessee, July 13th, 1850, the son of S. James Webb Rogers and Cornelia (Harris) Rogers. He was educated under private tutors and at St. Charles College in London, England, and later received honorary degrees of Doctor of Science at Georgetown University and the University of Maryland.

His entire life was devoted to scientific work, specializing in electrical research. He was awarded about fifty patents by the United States and other governments relating to multiplex and rapid printing telegraphy, electric lights and radio telegraphy. He was the discoverer of visual synchronism used extensively today in television, and the collector of considerable scientific data in connection with underground and underwater radio communication.

Dr. Rogers was an Honorary Fellow of the Maryland Academy of Sciences (1919) and the holder of its inventor's medal. The General Assembly of Maryland, by joint resolution of the House and Senate, extended him a vote of thanks for his great contribution to science and service to his country during the World War.

Dr. Rogers resided in Hyattsville, Prince George's county, Maryland, from 1895 to Dec. 12, 1929 when he died from a heart attack at his home. He was unmarried and a member of the Catholic Church.

## AN INTERVIEW WITH DOCTOR JAMES HARRIS ROGERS

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An audience with Dr. James Harris Rogers, the Hyattsville inventor who has made Maryland unique in the radio world, is the unfulfilled desire of radio students and enthusiasts throughout the United States. Years ago while everybody was reaching into the air to pull down signals, Dr. Rogers was investigating the possibility of tapping the waves of energy that travel beneath the earth's surface. The success of these subterranean experiments is a matter of common knowledge.

It has been the writer's privilege to talk with this distinguished gentleman. Dr. Rogers makes his home at Firwood with his brother Joseph Rogers. The home place is a large wooden structure set in spacious grounds, of the type characteristic of the South before the Civil War. At the outset, it is unfortunate to have to relate that the experimental work of this genius has been



Home Of Dr. Rogers  
Hyattsville, Md.

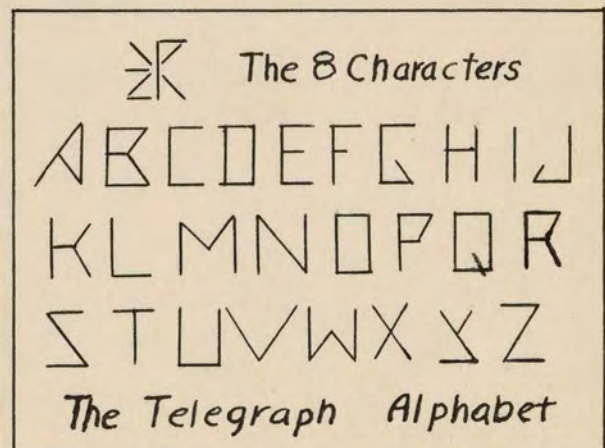
greatly impeded in recent years on account of failing health. Dr. Rogers is now approaching his eightieth year.

Soon after our exchange of greetings, "The Doctor," as he is known to his home folks, was thumbing the pages of an old scrap book and explaining to me his life's work. It contained newspaper clippings from all over the world elaborating on his inventions. Presently a smile came over his face and he said, "Here is an account of one of my earliest electrical adventures." It explained how at the age of 15 years, Dr. Rogers employed a black cat as a telegraph relay. A boot was adopted as the container for the animal, holes being cut in the toe from where the hind feet of the cat protruded and the front feet being tied with the laces. A telegraph key in the secondary circuit was connected to one paw. The high tension primary circuit was then passed through the cat and its muscular reaction responded to the dots and dashes of the Morse system. Dr. Rogers said it was one cat that never came back! The idea, however, was original and its success encouraged him to experiment further and ascertain means where it would not be necessary to employ a cat as a piece of electrical apparatus.

Passing on through the scrap book, it was learned

that Dr. Rogers at the age of 27 years was appointed Chief Electrician at the Capitol at Washington. While there he made many experiments with the electric light, and installed according to his own design a device called the Thermotele Meter by which the temperature in any part of the Capitol could be read in the boiler room.

Perhaps his first great invention was the printing telegraph. By this apparatus, anyone who understood the operation of a typewriter could send a message. With this machine as many as 200 words a minute could be sent as compared with 20 words transmitted by the old Morse key system. For more complete details of this device, the writer refers you to an article by E. Ellesmere McKeige, entitled "The Electrical Inventions of Dr. James Harris Rogers" in the library of Phi Mu Fraternity at the University of Maryland. However, it may be pertinent to mention the ingenious way the letters were formed by Dr. Rogers on the Rapid Printing Telegraph. The accompanying illustration shows the eight simple marks or characters with which it is



COURTESY E. McKEIGE.

BALTIMORE, MD- MARCH FOURTEENTH, NINETY-FIVE-  
TO J- H- ROGERS-- WASHINGTON - D-C-

WHAT HATH GOD WROUGHT- THE SPIRIT OF PROFESSOR  
MORSE HOVERING OVER THE SCENES OF HIS TRIALS AND TRIUMPHS OF FIFTY  
YEARS AGO, BEHOLDS IN WONDER AND AMAZEMENT THE SUCCESSFUL WORKING  
OF A NEW SYSTEM FROM THE OFFSPRING OF HIS GENIUS- HIS SPIRIT  
HAND BECKONS TO THE NEW GENIUS AND WAVES HIM A WELCOME TO THE ANNALS  
OF GLORIOUS FAME- HAIL TO THE DISCOVERER OF VISUAL SYNCHRONISM-  
HAIL TO THE INVENTOR OF RAPID PRINTING TELEGRAPHY- HAIL TO IN-  
VENTOR JAMES HARRIS ROGERS- THE BENEFACTOR OF MANKIND-

DISTINGUISHED AS YOUR FRIEND AND CO-LABORER -

EDWARD S- NORTON-

FIRST MESSAGE OVER THE NEW LINE.

The above is the result of the first trial of the System over the new line as soon as it was connected with the first two machines.

AN INTERVIEW WITH DOCTOR JAMES HARRIS ROGERS

A Thesis by

Carroll Staley James

as part of his initiation into Phi Mu Fraternity,  
the Honorary Engineering Fraternity of the University of  
Maryland.

May 8, 1929.

possible to form any letter of the English alphabet.

Continuing on through the book, Dr. Rogers came to his work on underground transmission and reception. Immediately his eyes brightened, for it was this work in which he was most interested, notwithstanding his experiments along these lines are left uncompleted on account of failing health. Dr. Rogers was a pioneer in this field of radio endeavor, and the results he obtained elevated him to much the same distinction enjoyed by men like Hertz, Edison, Marconi and Bell. Dr. Rogers' invention making radio practical for submarines is considered one of the great War time discoveries. His genius was employed to save life and not to destroy life.

As early as 1908, Dr. Rogers conceived the idea that the earth, and not the air, is the medium through which most radio waves are propogated. As a consequence he conducted experiments proving that the earth is a conductor of this energy. Although the messages received were weak, the results were unmistakable, but pressing duties prevented him from further developing the idea.

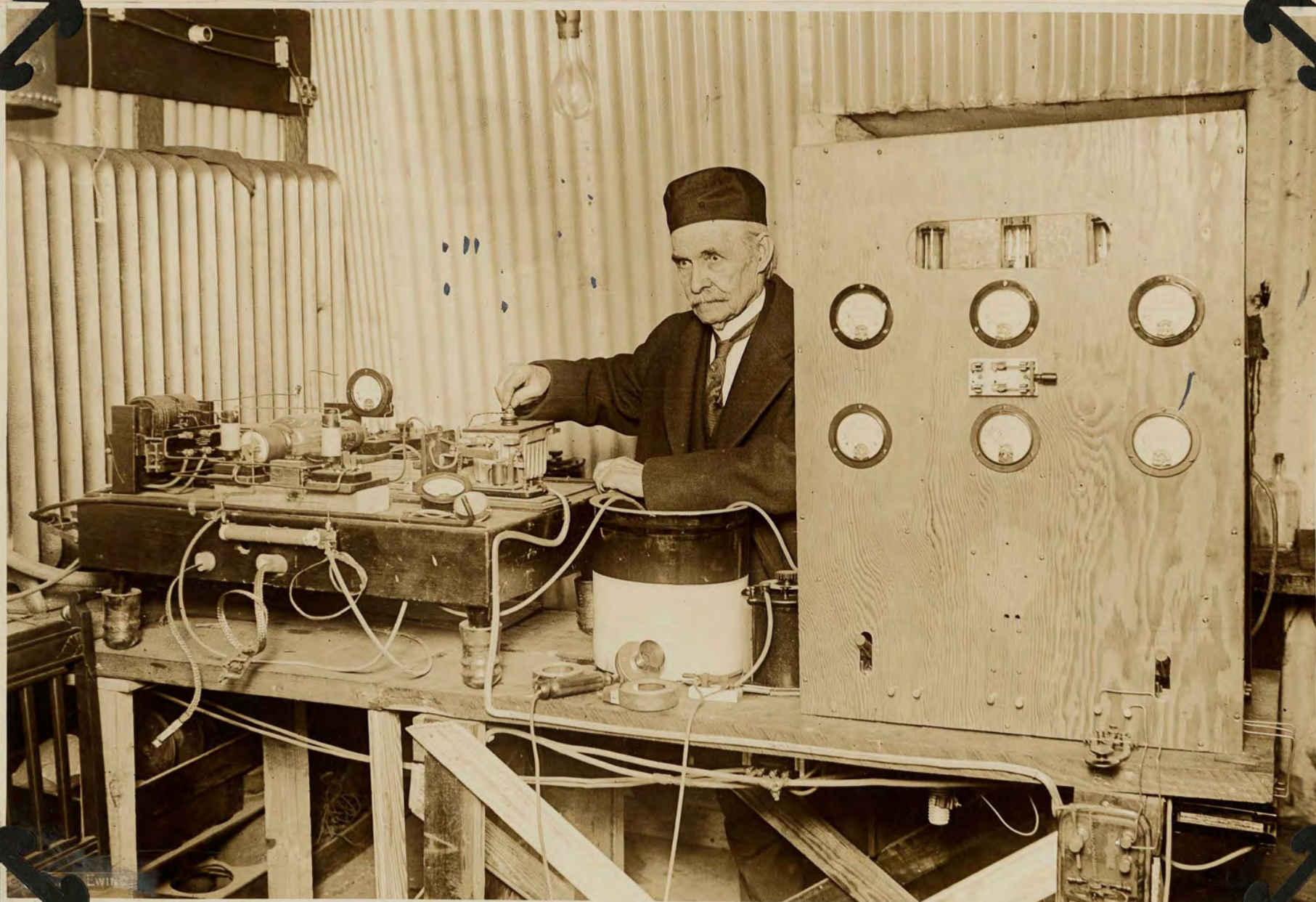
Later on, with the beginning of the World War in 1917, Dr. Rogers devoted all of his time to this subject, for he readily understood that if his idea of

underground antenna were practical, it could be used to great advantage in the trenches and dug-outs.

In 1918 Dr. Rogers' efforts were brought to the attention of the Navy Department at Washington. He had a hut constructed in the woods near Hyattsville where work could be carried on secretly. Antennae, radiating in all directions like the spokes of a wheel, were buried under the hut, and it was in this manner that the practicability of his idea was positively established. At the same time, Dr. Rogers conceived the idea that similar means of communication might be extended to submarines while submerged.

Appreciating the value of these theories, the Navy Department offered to send Dr. Rogers to New Orleans where his experiments could be carried on in a more extensive way. He was placed under a bond of secrecy, thus promising not to make application for any kind of patent pending. This he was only too glad to do. However, Dr. Rogers, because of his health, was unable to go to New Orleans, but his assistant was sent with whom he endeavored to keep in communication.

As matters developed, however, it appeared that the Navy Department withheld certain results of these experiments. Becoming disappointed with the lack of coop-



Dr. Rogers at his Transmitter 3 X R.

eration on the part of these officials, Dr. Rogers successfully tested his own ideas by means <sup>of</sup> by an improvised submarine. He at first planned to trail a wire behind the submarine, but found this impractical because of the propeller. He then decided to run the wires out of the conning tower and connect them electrically with the ends of the hull, thus forming a loop with the submarine as one side. This proved to be a practical proposition.



Dr. Rogers April, 1929

Ten days after the Navy Department released Dr. Rogers from his agreement of secrecy, he applied for letters patent on his submarine antenna. A patent was granted him, but later on the Commissioner of Patents recalled his patent in favor of two employees of the Bureau of Standards of the United States Government. The matter was appealed to the District Court of Appeals and the decision was reversed in favor of Dr. Rogers, but on a later trial of the case in a Federal Court at Baltimore, the patent rights again were taken from the Hyattsville inventor.

This episode in Dr. Rogers' career is a tragic one. After having spent thousands of dollars to assert a claim he considers just and right, he awakes today to find himself too impoverished to proceed further. He could have applied for letters patent during the early days of the War, but refrained because the information might have been disseminated to the enemies of his Country. Nonetheless, the delay cost him the credit of his greatest achievement.

After my interview with Dr. Rogers, I was accorded the opportunity to visit his laboratory, which has fallen into disuse after two years vacancy. Coils, batteries, radio sets and vacuum tubes were strewn everywhere. The outer room was used as an office. The next room served as the work shop and pieces of electrical apparatus of every description were in evidence everywhere. In large glass cases surrounding the room were models of his inventions, such as the printing telegraph, loop antenna, etc. A well had been dug under the floor for the experi-



Dr. Rogers' Lab.



Two Interior Views of the Laboratory

ments in connection with the improvised submarine.

In another room, adjoining the work shop, was the famous radio broadcasting station "3 X R", which Dr. Rogers equipped himself and sent messages that were heard from the Atlantic to the Pacific and in France, England and Germany. Dr. Rogers was able to receive messages as well as send them and during the World War listened regularly to the official reports broadcast to the German submarines by the Home Office. The underground aerial is used exclusively at Station "3 X R."

The second floor of the laboratory is equipped with storage batteries representing approximately 2,000 volts purchased by Dr. Rogers to increase the power of his Station, but which remain unused on account of his illness.

Upon leaving the home and laboratory of Dr. Rogers, I thought how well the life of this gentleman is portrayed in the poem by Emily E. Lantz, which she dedicated to him on his 74th birthday anniversary, July 13, 1924---

This man, endowed with God-sent gifts,  
Looks to the sun, yet knows no fears;  
For to his listening ear there comes  
The sweet music of the spheres.

His insight grasps God's mighty laws  
And bids them serve by sea and land;  
While in a Nation's crucial hour  
His knowledge balked an armed hand.

Humble, devout, humane, sincere,  
Serene he treads earth's common sod;  
Yet those who pass him often feel  
He walks apart with God.

12.

Copy of Patent of Dr. Rogers' Wireless  
Signaling System

J. H. ROGERS.

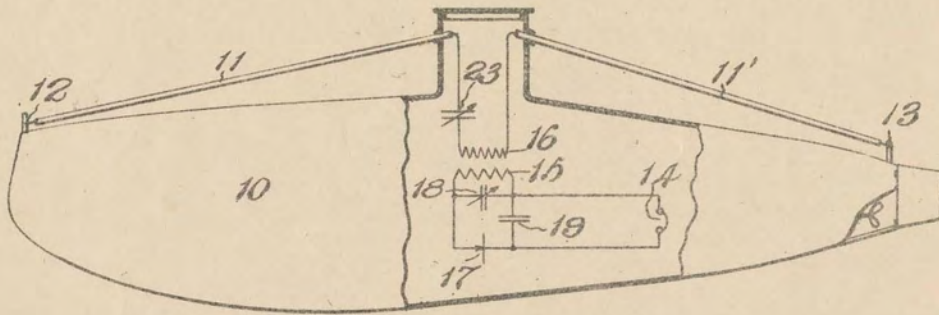
WIRELESS SIGNALING SYSTEM.

APPLICATION FILED JAN. 10, 1919.

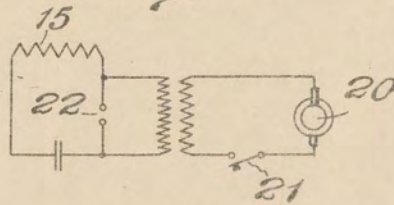
1,303,729.

Patented May 13, 1919.

*Fig. 1.*



*Fig. 2.*



Inventor

James Harris Rogers,

By

Orson C. Thayer,

Attorney

## UNITED STATES PATENT OFFICE.

JAMES HARRIS ROGERS, OF HYATTSVILLE, MARYLAND.

## WIRELESS SIGNALING SYSTEM.

1,303,729.

Specification of Letters Patent.

Patented May 13, 1919.

Application filed January 10, 1919. Serial No. 270,556.

*To all whom it may concern:*

Be it known that I, JAMES HARRIS ROGERS, a citizen of the United States, residing at Hyattsville, in the county of Prince Georges and State of Maryland, have invented new and useful Improvements in Wireless Signaling Systems, of which the following is a specification.

My invention relates to radio signaling, and has for its object the provision of an improved system for use in connection with vessels, particularly submarines.

The invention comprises the employment of an insulated radio conductor or antenna suitably mounted upon the submarine but insulated therefrom except at the outer ends where it is in electrical connection with the metallic body of the vessel. Electromagnetic wave sending and receiving instruments are arranged to be associated with the said conductor at a point intermediate its ends, in any suitable manner.

The invention consists in the novel system, and arrangement of apparatus and circuits hereinafter described and claimed, and shown in the accompanying drawings, in which drawings—

Figure 1 shows a submarine vessel equipped with the invention, a portion of the vessel being in section, and the wireless apparatus and circuits for receiving messages being diagrammatic;

Fig. 2 is a diagrammatic view of conventional sending apparatus and circuits for use with the system of Fig. 1 for the purpose of sending signals.

Referring to the drawings, 10 indicates the metallic hull of a submarine vessel, which may be of any type or construction, 11, 11' indicate an insulated radio conductor so mounted as to be electrically insulated from the vessel and the water except at its outer ends where the portion 11 is connected at 12 to the bow of the hull and portion 11' is connected at 13 to the stern of the hull.

Associated with the radio conductor, preferably at some point between its ends, are electromagnetic signal instruments. As shown conventionally, receiver 14 is in circuit with winding 15 of an inductive coupling of which the other winding 16 is connected to the radio conductor 11, 11'. 17 is the usual detector, which may be an audion, and 18 and 19 are the usual condensers.

Sending instruments and circuits for use with the system are shown in Fig. 2, wherein

20 is a source of current, 21 a key, and 22 a spark gap in an oscillating circuit which includes winding 15 of the coupling. This sending apparatus is of course on the vessel.

Any desired electromagnetic wave signal instruments may be employed, those shown being merely illustrative.

From the foregoing it will be seen that the radio conductor constitutes with the electrical connection through the vessel a loop oscillating circuit which will oscillate in response to electromagnetic waves being received, or set up by the sending instruments. A suitable tuning condenser 23 is provided to tune this oscillating circuit to the proper frequency. It will also be observed that the radio conductor is carefully insulated throughout its length between its ends, so that it cannot make electrical connection with the vessel, or the water when the submarine is submerged.

While I have described a specific embodiment of the invention, this is only by way of illustration, and it will be understood that modifications may be made without departing from the invention. For instance, the electrical connection between the ends of the radio conductor may be made by a metallic conductor other than the hull of the vessel.

I claim:

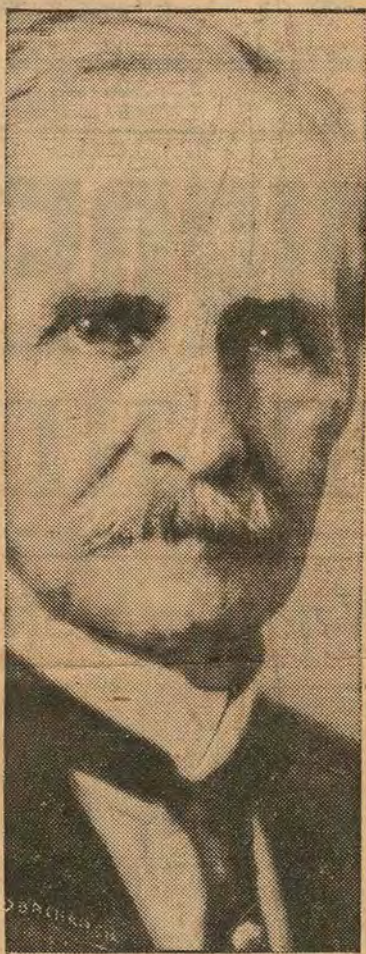
1. The combination with a vessel, of a radio conductor extending longitudinally thereof but insulated therefrom and from the water except at its ends which make electrical connection with the vessel, an electrical connection between said ends of the radio conductor through said vessel, and electromagnetic signaling instruments associated with said radio conductor at a point between its ends.

2. The combination with a submarine vessel having a metallic hull, of an insulated radio conductor extending longitudinally thereof and connected electrically at its ends with said hull, whereby a loop oscillating circuit is provided, and electromagnetic signaling instruments associated with said looped oscillating circuit.

3. The combination with a submarine vessel having a metallic hull, of an insulated radio conductor extending longitudinally thereof and connected electrically at its ends with said hull, whereby a loop oscillating circuit is provided, a tuning condenser in said oscillating circuit, and electromagnetic

NOTE Most of the material used in this Thesis was obtained directly from Dr. Rogers himself. Other sources of information were: Two scrap books of Dr. Rogers, one in his possession, and the other in the library of Georgetown University; Patent Office Records; "Who's Who in America," and a thesis prepared by E. Ellesmere McKeige called "The Electrical Inventions of Dr. James Harris Rogers of Hyattsville."

# MARYLAND SCIENTIST WHO DIED SUDDENLY



DR. JAMES HARRIS ROGERS

## DR. JAMES H. ROGERS, INVENTOR, SUCCUMBS

Hyattsville Scientist, 79, Dies  
At His Residence, Firwood,  
From Heart Attack

[Continued From Page 1]

radio the Maryland Academy of Sciences made Dr. Rogers an honorary fellow and awarded him the Inventor's Medal. The Maryland Legislature in 1919 extended him thanks for distinguished contributions to science.

As a result of his research work, Dr. Rogers was awarded about sixty patents relating to multiplex and rapid printing telegraphy, electric lights, the telephone and radio telegraphy.

### Early Inventions Sold

He was the chief electrician at the Capitol in Washington from 1877 to 1883. Some of his early inventions included a telephone repeater, and were sold to a syndicate which formed a \$15,000,000 company to produce and market them.

His patents included cylindrical automatic telegraphy, improved electric light, central telephone system, duplex and quadruplex telegraph, the thermotele meter, insulated submarine cable, visual synchronism, automatic synchronism, apparatus for producing high-frequency oscillating current and the underground and underwater telegraph.

# DR. JAMES H. ROGERS, INVENTOR, SUCCUMBS

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Hyattsville Scientist, 79, Dies  
At His Residence, Firwood,  
From Heart Attack

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TAKEN ILL AFTER RETIRING

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Was Pioneer In Underground  
And Underwater Radio  
Communication

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[Special Dispatch to The Evening Sun]

Hyattsville, Md., Dec. 12—Dr. James Harris Rogers, inventor and pioneer in underground and underwater radio communication, died suddenly early today at his home, Firwood, from a heart attack.

The scientist, who was 79 years old, was apparently in good health last night when he entertained members of his family. He became ill after he retired and died shortly after Dr. Thomas E. Latimer arrived.

## Experimented During War

During the World War Dr. Rogers constructed a dugout near his home, where he demonstrated the value of underground radio. In a small lake near by he made experiments in underwater communication, later demonstrating his discoveries in salt water at Piney Point, Maryland.

Dr. Rogers offered the results of his research and experiments to the Government at the outbreak of the war. During the conflict the United States was able to carry on uninterrupted communication with the Allied governments, with submarines when submerged and with battleships and airplanes by means of principals developed.

## Father Was In Confederate Army

Dr. Latimer said that the long hours that Dr. Rogers worked in the dugout during 1917 brought on carbon monoxide poisoning which left the inventor in a weakened condition.

Dr. Rogers was a son of James Webb and Cornelia R. Rogers, and was born in Franklyn, Tenn. His father served in the Confederate Army and later settled near Bladensburg, where the Rogers home, the Parthenon, is one of the historic spots. Dr. Rogers lived at the family home until about thirty years ago, when he moved to Firwood. He never married.

## Studied In London College

The inventor was educated by private tutors and at St. Charles College, London, England. He received degrees of doctor of science from the Georgetown University and the University of Maryland in 1919.

For his work in the development of

Continued On Page 2, Column 3]

# Apparatus For Exhibit

## J. Harris Rogers Collec- tion Is Offered To Smithsonian Institute For Museum

ANTIQUATED radio apparatus, some of which is valuable and some of which is worthless, has been pouring into the hands of various governmental agencies since the announcement several weeks ago that a survey is under way to establish a radio museum in the Smithsonian Institution.

Probably one of the most valuable collections offered is that of the late J. Harris Rogers, radio inventor, of Hyattsville. Rogers is credited with discovering an underground and underwater radio transmission, which was used by the navy during the World War but later abandoned. The inventor believed that it would decrease interference.

The Rogers laboratory also contains two machines used in visual synchronism, which technical men call his most wonderful invention because of its value in television. The offer was made to W. D. Terrell, chief of the radio division of the Department of Commerce, by James C. Rogers, brother of the inventor.

All such donations will be catalogued for the present before any definite selections are made for the museum.

FLEISCHER SERIES

Charles Fleischer, the noted writer,